AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1. (Original) A nucleic acid molecule comprising a sequence of nucleotides that encodes an HPV31 L1 protein as set forth in SEQ ID NO:4, the nucleic acid sequence being codon-optimized for high level expression in a yeast cell.

Claim 2. (Original) A vector comprising the nucleic acid molecule of claim 1.

Claim 3. (Original) A host cell comprising the vector of claim 3.

Claim 4. (Original) The host cell of claim 3, wherein the host cell is selected from the group consisting of: *Saccharomyces cerevisiae, Hansenula polymorpha, Pichia pastoris, Kluyvermyces fragilis, Kluyveromyces lactis,* and *Schizosaccharomyces pombe.*

Claim 5. (Original) The host cell of claim 4, wherein the host cell is *Saccharomyces cerevisiae.*

Claim 6. (Currently Amended) The nucleic acid molecule of claim 1, wherein the sequence of nucleotides comprises a sequence of nucleotides as set forth in SEQ ID NO:2 or SEQ ID NO:3.

Claim 7. (Original) A vector comprising the nucleic acid molecule of claim 6.

Claim 8. (Original) A host cell comprising the vector of claim 7.

Claims 9-11. (Canceled)

Claim 12. (Original) Virus-like particles (VLPs) comprised of recombinant L1 protein or recombinant L1 + L2 proteins of HPV31.

Claim 13. (Original) The VLPs of Claim 12 wherein the recombinant L1 protein or the recombinant L1 + L2 proteins are produced in yeast.

Claim 14. (Currently Amended) The VLPs of claim 13, wherein the recombinant L1 protein ~~or recombinant L1 + L2 proteins are~~ is encoded by a codon-optimized HPV31 L1 nucleic acid molecule.

Claim 15. (Currently Amended) The VLPs of claim 14, wherein the codon-optimized nucleic acid molecule ~~consists essentially of~~ comprises a sequence of nucleotides as set forth in SEQ ID NO:2 or SEQ ID NO:3.

Claim 16. (Original) A method of producing the VLPs of Claim 14, comprising:
(a) transforming yeast with a codon-optimized DNA molecule encoding HPV31 L1 protein or HPV31 L1 + L2 proteins;
(b) cultivating the transformed yeast under conditions that permit expression of the codon-optimized DNA molecule to produce a recombinant papillomavirus protein; and
(c) isolating the recombinant papillomavirus protein to produce the VLPs of Claim 14.

Claim 17. (Original) A vaccine comprising the VLPs of Claim 14.

Claim 18. (Original) Pharmaceutical compositions comprising the VLPs of claim 14.

Claim 19. (Original) A method of preventing HPV infection comprising administering the vaccine of Claim 17 to a mammal.

Claim 20. (Original) A method for inducing an immune response in an animal comprising administering the VLPs of Claim 14 to an animal.

Claim 21. (Original) The virus-like particles of Claim 14 wherein the yeast is selected from the group consisting of *Saccharomyces cerevisiae, Hansenula polymorpha, Pichia pastoris, Kluyvermyces fragilis, Kluyveromyces lactis,* and *Schizosaccharomyces pombe.*

Claim 22. (Original) The virus-like particles of claim 21, wherein the yeast is *Saccharomyces cerevisiae.*

Claim 23. (Original) The vaccine of claim 17, further comprising VLPs of at least one additional HPV type.

Claim 24. (Original) The vaccine of claim 23, wherein the at least one additional HPV type is selected from the group consisting of: HPV6, HPV11, HPV16, HPV18, HPV33, HPV35, HPV39, HPV45, HPV51, HPV52, HPV55, HPV56, HPV58, HPV59, and HPV68.

Claim 25. (Original) The vaccine of claim 24, wherein the at least one HPV type comprises HPV16.

Claim 26. (Original) The vaccine of claim 25, further comprising HPV18 VLPs.

Claim 27. (Original) The vaccine of claim 26, further comprising HPV6 VLPs and HPV11 VLPs.

Claim 28. (Original) A nucleic acid molecule comprising a sequence of nucleotides that encodes an HPV31 L1 protein, the nucleic acid molecule free from transcription termination signals that are recognized by yeast.

Claim 29. (Original) A vector comprising the nucleic acid molecule of claim 28.

Claim 30. (Original) A host cell comprising the vector of claim 29.

Claim 31. (Original) The host cell of claim 30, wherein the host cell is selected from the group consisting of: *Saccharomyces cerevisiae, Hansenula polymorpha, Pichia pastoris, Kluyvermyces fragilis, Kluyveromyces lactis,* and *Schizosaccharomyces pombe.*

Claim 32. (Original) The host cell of claim 31, wherein the host cell is *Saccharomyces cerevisiae.*

Claim 33. (Original) The VLPs of claim 13, wherein the recombinant L1 protein or recombinant L1 + L2 proteins are encoded by a HPV31 L1 nucleic acid molecule that is free from transcription termination signals that are recognized by yeast.

Claim 34. (Original) A method of producing the VLPs of Claim 33, comprising:

(a) transforming yeast with a DNA molecule encoding HPV31 L1 protein or HPV31 L1 + L2 proteins, the DNA molecule free from transcription termination sequences that are recognized by yeast;

(b) cultivating the transformed yeast under conditions that permit expression of the DNA molecule to produce a recombinant papillomavirus protein; and

(c) isolating the recombinant papillomavirus protein to produce the VLPs of Claim 33.

Claim 35. (Original) A vaccine comprising the VLPs of Claim 33.

Claim 36. (Original) Pharmaceutical compositions comprising the VLPs of claim 33.

Claim 37. (Original) A method of preventing HPV infection comprising administering the vaccine of Claim 35 to a mammal.

Claim 38. (Original) A method for inducing an immune response in an animal comprising administering the VLPs of Claim 33 to the animal.

Claim 39. (Original) The vaccine of claim 35, further comprising VLPs of at least one additional HPV type.

Claim 40. (Original) The vaccine of claim 39, wherein the at least one additional HPV type is selected from the group consisting of: HPV6, HPV11, HPV16, HPV18, HPV33, HPV35, HPV39, HPV45, HPV51, HPV52, HPV55, HPV56, HPV58, HPV59, and HPV68.

Claim 41-43. (Canceled)